CLAIMS

1. Method for capturing a digital panoramic image, comprising a step of projecting a panorama (PM) onto an image sensor (16) by means of a fish-eye objective lens having a constant field angle relative to its optical axis, the image sensor being rectangular in shape,

characterised in that the fish-eye objective lens (15, 30) is provided to project onto the image sensor (16), without reducing the field of view, a distorted panoramic image (ID1, ID3) which is not in the shape of a disk and which covers a number of pixels on the image sensor higher than the number of pixels that would be covered by a conventional image disk (4).

2. Method according to claim 1, wherein the fish-eye objective lens has an image point distribution function (Fd[Xi], Fd'[Xi]) that varies according to axes (Xi) perpendicular to the optical axis (OZ) of the objective lens, and which has a minimum spreading rate of the image along a first axis (X1) perpendicular to the optical axis, and a maximum spreading rate of the image along at least a second axis (X2) perpendicular to the optical axis, such that the image projected onto the image sensor is expanded along the second axis (X2).

3. Method according to claim 2, wherein the first (X1) and the second (X2) axes of the objective lens are perpendicular and the image (ID1) projected by the objective lens onto the image sensor is ellipsoidal in shape.

4. Method according to claim 3, wherein the image sensor (16) is arranged relative to the first and second axes of the objective lens so that the major axis (D2) of the ellipsoidal image (ID1) coincides with an effective length (Ld) of the image sensor.

5. Method according to claim 3, wherein the image sensor (16) is arranged relative to the first and second axes of the objective lens so that the major axis (X2) of the ellipsoidal image coincides with a diagonal of the image sensor.

6. Method according to one of claims 2 to 5, wherein the objective lens has a distribution function (Fd'[Xi]) that is not linear and that has a maximum divergence of at least ±10% compared to a linear distribution function (Fd[Xi]), such that the projected image (ID3) has at least one substantially expanded zone (ID3-1) and at least one substantially compressed zone (ID3-2).

7. Method according to one of claims 1 to 6, wherein the fish-eye objective lens comprises a combination of a group of lenses (L1-L6) provided to capture a panoramic image according to a determined field angle, and of at least one cylindrical lens (L7, L8) having an axis of revolution perpendicular to the optical axis of the objective lens.

8. Method for displaying on a screen (23) an initial panoramic image (ID1) captured in accordance with the method according to one of claims 1 to 7, characterised in that it comprises a step of correcting (S3, S3') the distortions of the initial image.

9. Method according to claim 8, wherein the correction step (S3) comprises transforming the initial image into a corrected digital image (ID2) in the shape of a disk, the diameter of the corrected image being chosen so that the corrected image comprises a number of image points higher than the number of pixels of the image sensor covered by the initial image.

10. Method according to claim 9, wherein the initial image (ID1) is ellipsoidal in shape and the corrected image (ID2) has a diameter (D3) the size in number of pixels of

which is at least equal to the size in number of pixels of the major axis (D2) of the initial ellipsoidal image (ID1).

11. Method according to claim 8, comprising a step of projecting onto the initial image (ID1), image points (E(i,j)) of an image sector (IS) to be presented on the screen (23), allowing the colours of the image points of the image sector to be presented on the screen to be determined, the step of projecting the image points (E(i,j)) of the image sector (IS) onto the initial image (ID1) being performed by means of a distribution function (Fd) representative of the optical properties of the fish-eye objective lens, such that the step of correcting (S3') the distortions of the initial image is implicit in the projection step.

12. Method according to claim 11, wherein the projection step comprises a first step of projecting the image points (E(i,j)) of the image sector (IS) onto a sphere portion (HS), and a second step of projecting, onto the initial image (ID1), the image points (P(px,py,pz)) projected onto the sphere portion.

13. Computer program product recorded on a medium (25) and loadable into the memory of a digital computer (22), characterised in that it contains program codes executable by the computer, arranged to execute the steps of the display method according to one of claims 8 to 12.

14. Fish-eye objective lens having a constant field angle relative to its optical axis and comprising optical means (L1-L8) for projecting the image of a panorama (PM) onto an image sensor (16), characterised in that it comprises optical means (L6-L7) for projecting, without reducing the field of view, a distorted image (ID1, ID3) that is not in the shape of a disk and which covers a number of pixels on an image sensor higher than the number of pixels that would be covered by a conventional image disk (4).

15. Objective lens according to claim 14, having an image point distribution function (Fd[Xi], Fd'[Xi]) that varies according to axes (Xi) perpendicular to the optical axis (OZ) of the objective lens, and which has a minimum spreading rate of the image along a first axis (X1) perpendicular to the optical axis, and a maximum spreading rate of the image along at least a second axis (X2) perpendicular to the optical axis, such that an image delivered by the objective lens is expanded along the second axis (X2).

16. Objective lens according to claim 15, having a distribution function (Fd'[Xi]) that is not linear and that has a maximum divergence of at least ±10% compared to a linear distribution function (Fd[Xi]), such that an image (ID3) delivered by the objective lens has at least one substantially expanded zone (ID3-1) and at least one substantially compressed zone (ID3-2).

17. Objective lens according to one of claims 14 to 16, comprising a combination of a group of lenses (L1-L6) provided to capture a panoramic image according to a determined field angle, and of at least one cylindrical lens (L7, L8) having an axis of revolution perpendicular to the optical axis of the objective lens.

18. Objective lens according to one of claims 14 to 17, comprising optical means forming an apodizer.

19. Objective lens according to claim 18, wherein the optical means forming an apodizer comprise at least one a-spherical lens.

20. Objective lens according to one of claims 14 to 19, comprising at least one distorting mirror.

21. Objective lens according to one of claims 14 to 20, characterised in that it is of the panoramic adapter type and

is provided to be placed in front of a still camera non-panoramic objective lens.